

REMARKS

The following claims are pending in the application: 1 – 4, 7 – 25 and 27 – 29

The following claims have been amended: 21, 25, and 28

The following claims have been deleted: Not applicable

The following claims have been added: 30 – 35

As a result of the foregoing Amendment, the following claims remain pending in the application: 1 – 4, 7 – 25, and 27 – 35.

The Rejection Under 35 U.S.C. §102(b)

The Examiner has rejected claims 1 – 4, 7 – 20, 25, and 27 – 29 under 35 U.S.C. §102(b) as being anticipated by Yadav et al. (US Pat. No. 6,531,704).

Applicants respectfully submit that the Examiner's rejection of claims 1 – 4, 7 – 20, 25, and 27 – 29 may be properly withdrawn as Yadav fails to teach each and every element of the present invention as currently claimed – specifically, that the sensing material comprise a majority of cuprous chloride (CuCl). Although it appears that Yadav teaches the basic sensor configuration of the present invention – a substrate, a pair of electrodes, and a sensing material deposited on the substrate and in electrical contact with the electrodes – Yadav fails to teach or suggest a copper chloride sensing material having the specific species composition claimed in the present invention. That is to say, it is not possible to discern from the teachings of Yadav what relative proportions are what species of copper chloride (cuprous or cupric, for example).

MPEP 2131.03(II) states that

When the prior art discloses a range which touches, overlaps or is within the claimed range, but no specific examples falling within the claimed

range are disclosed, a case by case determination must be made as to anticipation. In order to anticipate the claims, the claimed subject matter must be disclosed in the reference with "sufficient specificity to constitute an anticipation under the statute." What constitutes a "sufficient specificity" is fact dependent. If the claims are directed to a narrow range, the reference teaches a broad range, and there is evidence of unexpected results within the claimed narrow range, depending on the other facts of the case, it may be reasonable to conclude that the narrow range is not disclosed with "sufficient specificity" to constitute an anticipation of the claims. The unexpected results may also render the claims unobvious.

Although Yadav broadly discloses copper chloride as a potential sensing material, Yadav is silent as to the relative proportion of the various copper chloride species. Accordingly, Yadav cannot fairly be said to disclose the claimed subject matter (i.e., that the sensing material comprise a majority of cuprous chloride) with sufficient specificity to constitute an anticipation. Further, applicants' specification provides evidence of unexpected results within the claimed narrow range (i.e., a majority of cuprous chloride) so as to reasonably conclude that the narrow range is not disclosed with the requisite "sufficient specificity" to constitute an anticipation of the claims. Applicants respectfully direct the Examiner's attention to pages 10 - 11 wherein a variety of fabrication methods were investigated, to page 11 wherein the differences in morphology are disclosed, and pages 11 – 13 wherein the performance of various sensor configurations are discussed. As disclosed, sensors (1B) and (2) exhibited a response to carbon monoxide while sensor (1A) exhibited no response despite having a copper chloride sensing material! Therefore, not all copper chloride sensing materials are sensitive to the presence of carbon monoxide. Further, while sensor (1B) fluctuated between about 89 and 87 k Ω when exposed to periods of N₂/H₂ interrupted by periods of CO gas (see Figure 6 and page 12 lines 11 – 14), sensor (2) exhibited heightened

sensitivity to the presence of CO gas reaching about 580 k Ω during periods of CO gas and climbing back to about 700 k Ω during periods of N₂/H₂ (see Figure 7 and page 12 line 18 to page 13 line 2). Therefore, the morphology of the sensing material affects the sensitivity of the sensor. Independent claims 1, 11, 15, 25, and 29 each recite that the sensing material (comprising a majority of cuprous chloride) has an electrical property that varies in relation to the presence of carbon monoxide. Accordingly, as Yadav fails to discuss the species of copper chloride, the desirability of one species over the others, and only discusses copper chloride in the generic, general sense – it is not proper to consider such a disclosure to be anticipatory of the present invention. Thus, Applicants respectfully submit that the Examiner's outstanding rejection may be properly withdrawn.

The Examiner has rejected claims 21 – 24 under 35 U.S.C. §102(e) as being anticipated by Chang et al. (US Pat. No. 6,474,138).

Applicants have amended claim 21 to more accurately describe the present invention and respectfully submit that Chang et al. fails to teach or suggest a sensing material, comprised of a majority of cuprous chloride, having a lamellar structure. Applicants again direct the Examiner's attention to pages 10 -11 wherein a variety of fabrication methods were investigated, to page 11 wherein the differences in morphology are disclosed, and pages 11 – 13 wherein the performance of various sensor configurations are discussed. The Examiner's attention is also directed to the comparison of sensor (1B) and sensor (2) showing the heightened sensitivity attributable to morphology. Accordingly, as Chang is silent to the morphology of the sensing material, it cannot be fairly said to anticipate claims 21 – 24 as presently amended. Thus,

Applicants respectfully submit that the Examiner's outstanding rejection may be properly withdrawn.

New Claims 30 – 35

Applicants have added claims 30 – 35 and respectfully submit that the claims are supported by the disclosure as originally filed (no new matter has been added).

CONCLUSION

In view of the foregoing amendment and accompanying remarks, the Applicants respectfully submit that the present application is properly in condition for allowance and may be passed to issuance upon payment of the appropriate fees.

Telephone inquiry to the undersigned in order to clarify or otherwise expedite prosecution of the subject application is respectfully encouraged.

Respectfully submitted,

SCOTT L. SWARTZ
CHRISTOPHER T. HOLT
PRABIR K. DUTTA
RAMACHANDRA RAO REVUR

Date: May 12, 2005

By: Michael Stonebrook

Michael Stonebrook
Registration No.: 53,851
Standley Law Group LLP
495 Metro Place South, Suite 210
Dublin, Ohio 43017-5319
Telephone: (614) 792-5555
Facsimile: (614) 792-5536